6.2 REGULATION OF THE MIGRATION OF CONTAMINATED GROUNDWATER

The migration and remediation of contaminated groundwater is of primary concern to local urban water supply agencies, including the cities of Modesto, Ceres, Turlock, and Hughson. Also of concern is the localized contamination of groundwater by industrial point sources such as dry cleaning facilities, food processors and the numerous fuel stations throughout the Basin.

While the TGBA does not have authority or responsibility for remediation of this contamination, it is committed to coordinating with responsible parties and regulatory agencies to keep the local water agencies informed of the status of known groundwater contamination in the Basin.

6.2.1 Actions

The following actions may be implemented by the local water agencies individually or in conjunction with the TGBA to address groundwater contamination:

- Coordinate with the USGS and/or other appropriate agencies to expand the network of monitoring wells to provide for an early warning system for public supply wells.
- If detections occur in existing or future monitoring wells, facilitate meetings between the responsible parties and potentially impacted water agency(ies) to develop strategies to minimize the further spread of contaminants. Specifically, a water agency could consider altering groundwater extraction patterns or altering production wells in the vicinity of a pollutant plume to change the groundwater gradient.
- Provide a forum to share all information on mapped contaminant plumes and leaking UST sites in order to develop groundwater extraction patterns and in site planning of future production or monitoring wells.
- Meet with representatives of the CVRWQCB staff to establish a positive relationship and identify ways to have open and expedient communications with the CVRWQCB staff regarding any new occurrences of contamination. Open communication channels are especially important when contamination is believed to have reached the water table.
- Track upcoming regulations on septic systems, National Pollutant Discharge Elimination System (NPDES) Permits, agricultural discharges and other regulatory programs that pertain to water quality.

6.3 IDENTIFICATION OF WELL CONSTRUCTION POLICIES

Both the Stanislaus County DER and the Merced County DEH administer the well permitting program in the unincorporated areas of the Turlock Groundwater Basin within their respective boundaries. The standards for construction are consistent with those recommended in State Water Code Section 13801. This section requires counties, cities, and water agencies to adopt the State Model Well Ordinance as a minimum standard for well construction or a more rigorous standard, if desired.

Each city member of the TGBA has enacted a well ordinance adopting the California Well Standards, Bulletin 74-81 (DWR, 1981a), and all its supplements. This ordinance is utilized in wells constructed within the incorporated area of each city. Each city provides a review of well construction plans and specifications within the incorporated area.

ATTACHMENT 9: Supporting Documentation - 2

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Clean-up of underground chemical plume set to begin

Alex Cantatore

Jul 22, 8:48 p.m.

A potentially hazardous plume of dry cleaning fluid has sat beneath downtown Turlock for years.

This week, the cleanup effort kicks off in earnest, with construction completing on a pump-and-treat cleaning system.

“It’s not a public health risk at all, it’s just one of those things that’s there, and we need to take care of it,” said Turlock Regulatory Affairs Manager Michael Cooke.

Tetrachloroethylene, also known as PCE, is a solvent most often used as part of the dry cleaning process. The city discovered an underground plume of the chemical, near downtown Turlock, in the early 1990s.

To this day, city officials remain unsure exactly how PCE reached Turlock’s soil. The most likely explanation suggests that some drycleaner expelled PCE into the city’s sewer system, and then that PCE somehow leaked from the sewer system into the ground below.

Because the source was never conclusively determined, in 2009 the City of Turlock volunteered to lead the cleanup effort, with monetary assistance from the State Water Resources Control Board’s Clean Up and Abatement Account. The $455,000 obtained from the state is expected to cover costs for the entire remediation effort.

While the chemical is considered hazardous, and can be toxic if ingested, the plume currently poses no danger to Turlock’s drinking water supply, according to Cooke.

“It’s kind of isolated in the downtown area,” Cooke said. “It’s not affecting drinking wells.”

The plume is currently between 15 and 50 feet underground, far from the 200-300 foot deep water wells utilized by Turlock.

The cleanup will rely on a “pump-and-treat” system, which pumps contaminated groundwater to the surface, then blows air through the water which causes the PCE to evaporate. The leftover water is then pumped to the wastewater treatment plant for further treatment.

Construction on the system finished this week, built in a corner of the City of Turlock employee parking lot, directly over the PCE plume. The system will be tested next week, and then turned on for good about a month after that.

But when will the pump turn off?

“That’s what we don’t know,” Cooke said.

The cleanup effort could be complete in two years, or it could take 10, Cooke said. Monthly samples will be taken to determine progress in the cleanup.

The State Water Resources Control Board will have the final say as to when the cleanup is complete.

To contact Alex Cantatore, e-mail acantatore@turlockjournal.com or call 634-9141 ext. 2005.

Return Home »

ATTACHMENT 9: Supporting Documentation - 3

STATE WATER RESOURCES CONTROL BOARD
BOARD MEETING SESSION – DIVISION OF FINANCIAL ASSISTANCE
JANUARY 6, 2009

ITEM 5

SUBJECT

CONSIDERATION OF A RESOLUTION TO ALLOCATE AN ADDITIONAL $650,000 FROM THE CLEANUP AND ABATEMENT ACCOUNT (CAA) TO THE CENTRAL VALLEY REGIONAL WATER QUALITY CONTROL BOARD (CENTRAL VALLEY WATER BOARD) FOR CONTINUATION OF THE OVERSIGHT OF REMOVAL OF TETRACHLOROETHENE (PCE) POLLUTION BY THE CITY OF TURLOCK (CITY), STANISLAUS COUNTY.

DISCUSSION

The Central Valley Water Board requests funding of $650,000 to continue support of the City's investigation and remediation of the PCE plumes in downtown Turlock.

In 1994, the City, the Central Valley Water Board, and the California Department of Toxic Substances Control entered into an agreement for investigation and removal of PCE in the City. It was agreed that an investigation would be conducted to detect the level of PCE contamination in soil and ground water in downtown Turlock. This investigation would be followed by the implementation of a groundwater management plan for the extraction of PCE from the groundwater and the containment of PCE plume(s).

To date, the City has identified the extent of the PCE plume, concluded that there is no significant source of PCE remaining in soils, and determined that, although the PCE plume is naturally attenuating over time, enhancement of the natural attenuation process may be necessary. The City also has constructed a three-dimensional groundwater flow and transport model to assess groundwater flow, PCE transport rates, and predict future PCE concentrations under different scenarios.

This current funding would be applied to project costs incurred by the City from 2003-2006 ($141,041), staff oversight costs ($50,000) and to the additional investigation of the PCE plumes, installation and operation of a pump and treat system to contain and remove the core of the main PCE plume. The Central Valley Water Board staff anticipates that the requested funds will support operation of a pump and treat system for a period of 18 to 24 months.

POLICY ISSUE

Should the State Water Board:

Approve the additional funds of $650,000, from the CAA to the Central Valley Water Board in support of the City's investigation and remediation of the PCE plumes in downtown Turlock?

FISCAL IMPACT

Approving $650,000 would leave an uncommitted balance of approximately $12,520,873 in the CAA as of November 3, 2008.

REGIONAL WATER BOARD IMPACT

Yes, the Central Valley Water Board.

STAFF RECOMMENDATION

That the State Water Board should:

Approve the additional $650,000, from the CAA to the Central Valley Water Board in support of the City's investigation and remediation of the PCE plumes in downtown Turlock.

State Water Resources Control Board action on this item will assist the Water Boards in reaching Goal 2 of the Strategic Plan Update: 2008-2012 to improve and protect groundwater quality in high-use basins by 2030. In particular, approval of this item will assist in fulfilling Action 2.3.2 to coordinate with the Department of Toxic Substances Control, as appropriate, to focus on enforcement actions, investigations, and cleanup efforts to remediate contamination plumes that impact or have the potential to impact drinking water sources.

Linda S. Adams
Secretary for
Environmental Protection

State W ter Resources Contro Board

Division of Financial Assistance
1001 I Street • Sacramento, California 95814 • (916) 341-5700
Mailing Address: P.O. Box 944212 • Sacramento, California • 94244-2120
FAX (916) 341-5707 http://www.waterboards.ca.gov

Arnold Schwarzenegge
Governor

ATTACHMENT 9: Supporting Documentation - 4

TO: Pamela Creedon, Executive Director
Central Valley Regional Water Quality Control Board

FROM: Barbara L. Evoy, Deputy Director
DIVISION OF FINANCIAL ASSISTANCE

DATE: FEB 0 3 2009

SUBJECT: APPROVAL OF FUNDING FROM THE CLEANUP AND ABATEMENT ACCOUNT (CAA) TO CITY OF TURLOCK; C/A 277

Your request for CAA funds in the amount of $650,000 to support the Oversite of Removal of Tetrachloroethene (PCE) Pollution was approved on January 6, 2009. Attached is the "Request for Cleanup and Abatement Account Funds" approval form. A copy of this approval form will be forwarded to the Accounting Office for processing. The Program Cost Allocation (PCA) No. 27814 has been established for this Project. The following additional documents are attached for your use:

- The approved Request for CAA Funds. This is a copy for your records.
- A Vendor Data Record (STD. 204). You may duplicate this for each vendor used on this Project. In addition, if the funds are used for contract services, a copy of the signed contract and a copy of the Contract Request Form must be forwarded to Lola Barba for inclusion in the Project file.
- The Request for Payment. A copy of this form must be sent with each vendor invoice requesting payment. The signature of the Project Manager should appear on the original invoice. The original and three (3) copies of the invoice should be attached and forwarded to Lola Barba for review.

Upon completion of the Project, please submit a Final Report describing the work accomplished. If you have any questions, please contact Cristina Mayorga - Ochoa at (916) 341-5836 or Lola Barba at (916) 341-5638.

Enclosures (5)

cc: Sue McConnell, Region 5
Debra Latour, DAS - Accounting
Tanya Kendricks, DAS - Accounting
Donna Lea, DAS – Budget
Lola Barba, DFA

STATE WATER RESOURCES CONTROL BOARD
RESOLUTION NO. 2009-0003

ALLOCATE ADDITIONAL FUNDS IN THE AMOUNT OF $650,000 FROM THE CLEANUP AND ABATEMENT ACCOUNT (CAA) TO THE CENTRAL VALLEY REGIONAL QUALITY CONTROL BOARD (CENTRAL VALLEY WATER BOARD) FOR CONTINUATION OF THE OVERSIGHT OF REMOVAL OF TETRACHLOROETHENE (PCE) POLLUTION BY THE CITY OF TURLOCK (CITY), STANISLAUS COUNTY.

WHEREAS:

1. The Central Valley Water Board requests $650,000 to continue support of the City's investigation and remediation of the PCE plumes in downtown Turlock. This request will supplement a previous CAA allocation of $46,750 for this Project;

2. The funds will be applied to Project costs incurred by the City from 2003-2006 and to additional staff oversight and investigation of the PCE plumes, installation and operation of a pump and treat system to contain and remove the core of the main PCE plume;

3. In 1994, the City, the Central Valley Water Board, and the California Department of Toxic Substances Control entered into an agreement for PCE Investigation and Removal in Turlock. It was agreed that an investigation would be conducted to detect the level of PCE contamination in soil and ground water in downtown Turlock. This investigation would be followed by the implementation of a groundwater management plan for the extraction of PCE from the groundwater and the containment of PCE plume(s); and

4. The requested allocation is consistent with the purposes of California Water Code (CWC) § 13442. CWC § 13442 provides that the State Water Resources Control Board (State Water Board) may order moneys to be paid from CAA to a public agency with authority to cleanup or abate the effects of a waste in order "to assist in cleaning up the waste or abating its effects on waters of the state."

THEREFORE BE IT RESOLVED THAT:

The State Water Board:

1. Approves the allocation of additional funds of $650,000 from the CAA to the Central Valley Water Board to continue support of the City's investigation and remediation of the PCE plumes in downtown Turlock; and

2. The funds will be available until January 31, 2012. Any unexpended funds, as of January 31, 2012, shall revert to CAA, unless the Deputy Director or Assistant Deputy Director of the Division of Financial Assistance authorizes an extension.

CERTIFICATION

The undersigned, Clerk to the Board, does hereby certify that the foregoing is a full, true, and correct copy of a Resolution duly and regularly adopted at a meeting of the State Water Board held on January 6, 2009.

AYE:	Chair Tam M. Doduc Vice Chair Gary Wolff, P.E., Ph.D Arthur G. Baggett, Jr. Charles R. Hoppin Frances Spivy-Weber
NAY:	None
ABSENT:	None
ABSTAIN:	None

Jeanine Townsend
Clerk to the Board

THE BACK OF THIS DOCUMENT CONTAINS AN ARTIFICIAL WATERMARK - VIEW AT AN ANGLE

WARRANT NUMBER

STATE OF CALIFORNIA 07-822199

FUND NO. 0439 FUND NAME UNDERGRD STOR TANK CLEA

H THE TREASURER OF THE STATE WILL PAY OUT OF THE

IDENTIFICATION NO. 3940 MO. 03 DAY 30 YR. 2012

90-1342/1211

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TO: 822199
--- CITY OF TURLOCK

JOHN CHIANG
CALIFORNIA STATE CONTROLLER

FORM 04-08 (2-97) CONTROLLERS WARRANT

:121113423: 07822199711

REMITTANCE ADVICE

STD. 404C (REV. 4-95)

VENDOR-ID CA0000277-00

PAGE 1

STATE OF CALIFORNIA DOF

THE ENCLOSED WARRANT IS IN PAYMENT OF THE INVOICES SHOWN BELOW

DEPARTMENT NAME: WATER RESOURCES CONTROL BOARD

ORG. CODE: 3940

DEPARTMENT ADDRESS: P.O. BOX 100 SACRAMENTO CA 95812-0100

CLAIM SCHED. NO.: 6791359

VENDOR:
CITY OF TURLOCK
ATTN: MICHAEL COOKE
156 S BROADWAY STE 270
TURLOCK CA 95380

PYMT INQUIRIES: (916)341-5023

INVOICE DATE	INVOICE NUMBER	INVOICE AMOUNT	RPI
03/20/12	2012-001 (#26)	112737.07	

CIA 277

FEDERAL TAX ID NO. OR SSAN	RP TYPE	TAX YR	TOTAL REPORTED TO IRS
			.00

TOTAL PAYMENT 112737.07

ATTACHMENT 9: Supporting Documentation - 5

WORK PLAN FOR SITE ASSESSMENT
City of Turlock PCE Pump and Treat Project
Turlock, California

Prepared for:
City of Turlock

September 4, 2009

URS Corporation
Job No. 18715235

September 4, 2009

Mr. Michael Cooke, Regulatory Affairs Manager
City of Turlock
156 S. Broadway, Suite 270
Turlock, CA 95380

Subject: Work Plan for Site Assessment
City of Turlock PCE Pump and Treat Project
Turlock, California
(URS Job No. 18715235)

Dear Mr. Cooke:

URS Corporation (URS) is pleased to submit the enclosed Work Plan for the City of Turlock PCE Pump and Treat Project. The Work Plan was prepared in accordance with the scope of work set forth in the URS' June 9, 2009 proposal.

This Work Plan was prepared by URS in a manner consistent with the level of care and skill ordinarily exercised by professional engineers, geologists, and environmental scientists in the geographic area of the above-referenced study area. URS provides no other warranties, either express or implied, concerning the contents of this Work Plan, which was prepared under the technical direction of the undersigned.

Please feel free to contact us if you have any questions or comments.

Sincerely,
URS Corporation

Stephen T. Spencer, PE
Remediation & Industrial Group Lead

Enclosure (1 bound original)

c: Marcus Pierce, CRWQCB (1 bound copy)
Nicole Gleason, Downey Brand LLP (1 bound copy)
URS Fresno file (1 bound copy)

TABLE OF CONTENTS

TABLE OF CONTENTS (continued)

FIGURES

TABLES

APPENDICES

INVESTIGATION WORK PLAN
City of Turlock PCE Pump and Treat Project
Turlock, California

1.0 INTRODUCTION

This Investigation Work Plan was prepared by URS Corporation (URS) for the City of Turlock.

The study area for the investigation is in the central portion of the City of Turlock, California (Figure 1). The study area consists of two separate sites in downtown Turlock. The primary area of investigation is roughly bounded by Olive Avenue to the northwest, Broadway Avenue to the southwest, D Street to the southeast, and Palm Street to the northeast. A secondary area is located to the southwest, near the Old Carr's Cleaners site (Figure 2). Tetrachloroethylene (PCE) has been detected consistently in groundwater samples collected in the study area. The scope of work described herein includes: baseline / corrective action groundwater monitoring; investigation of data gaps near the Old Carr's Cleaners area; and collection of data which would define parameters for the design of the proposed pump and treat system, including a stratigraphic evaluation, water quality analyses, installation of observation and extraction wells, and an aquifer performance test.

2.0 OBJECTIVE AND SCOPE

The objectives of this assessment are threefold: (1) update the position of the known groundwater PCE plume using the existing monitoring well network; (2) characterize subsurface conditions for those portions of the study area near Old Carr's Cleaners with known data gaps; and (3) provide design data for the proposed pump and treat system, including both stratigraphic and water quality data. To meet these objectives, URS proposed the following scope of work:

- Evaluate available monitoring well and investigative data regarding detections of PCE in groundwater within the study area.
- Obtain all required permits from the applicable regulatory agencies.
- Conduct a baseline groundwater monitoring event comprising collection of groundwater samples from existing monitoring wells.
- Investigate data gaps near Old Carr's Cleaners by performing lithologic profiling and depth-discrete groundwater sampling at up to 6 locations using a Cone Penetrometer Test (CPT) rig. At each location, up to five depth-discrete groundwater samples will be collected using Hydropunch-type sampling equipment to evaluate potential vertical contaminant migration. The samples will be analyzed for VOCs by a state accredited environmental laboratory.
- Collect data that would define parameters for the design of the proposed pump and treat system, including the following tasks:

- Advance a CPT boring to approximately 80 feet below ground surface (bgs) at the location of the proposed extraction well to provide a stratigraphic and lithological evaluation of soil conditions.
- Collect up to five depth discrete groundwater samples. Water samples will be submitted to a state certified environmental laboratory for analysis for volatile organic compounds (VOCs) by EPA method 8260.
- Collect a minimum of three soil samples for sieve analyses to support design of the extraction well.

- Prepare a letter report summarizing the results of the investigation and recommendations for the location and design of proposed extraction and observation well.

Once the locations for the extraction and observation wells have been accepted by RWQCB, URS will:

- Install and develop an extraction well.
- Install and develop an observation well.
- Conduct aquifer performance test, using the new extraction well, including a background monitoring period, a step-drawdown test, a constant-rate discharge test, and a recovery test.
- Calculate and interpret key hydraulic properties of the aquifer, and prepare a written report summarizing the feasibility and appropriateness of pump and treat as a viable remediation system based upon the results of the aquifer performance test.

3.0 STUDY AREA DESCRIPTION

The study area is located in the central portion of the City of Turlock, California (Figure 1). Land use within the study area primarily consists of industrial and commercial activities. There are two separate sites. The primary area of investigation is roughly bounded by Olive Avenue to the northwest, Broadway Avenue to the southwest, D Street to the southeast, and Palm Street to the northeast. A secondary area is located to the southwest, near the Old Carr's Cleaners site.

4.0 BACKGROUND INFORMATION

URS has reviewed available environmental documents related to the Downtown Dry Cleaners PCE project. Based on the review of these documents, environmental investigation work has been conducted in the project area between 1997 and 2006. Depth-discrete groundwater samples have been collected at many locations within the study area, and several groundwater monitoring wells have been installed. In 1990, PCE was first detected in groundwater samples collected for the investigation of the Downtown Dry Cleaners. Since then, PCE has been detected consistently in groundwater samples collected in the area described in Section 3.0 of this report.

The most recent groundwater monitoring round was conducted in June 2006 [NCE, 2006].

5.0 ENVIRONMENTAL SETTING

This section summarizes available information on the topography, geology, hydrology, and climatology of the study area.

5.1 TOPOGRAPHY

The study area is located in the San Joaquin Valley of California at an average elevation of about 104 feet above mean sea level (amsl) [USGS, 1976]. The topography of the study area is relatively flat and level, sloping gently downward to the southwest at about 7 feet per mile.

5.2 GEOLOGY

The study area lies within the central part of the Great Valley Geomorphic Province of California. The valley is approximately 400 miles long and averages 50 miles wide. The valley has been filled with a thick sequence of marine and nonmarine sediments dating from the late Jurassic to the Holocene periods. The uppermost strata of the Great Valley represent, for the most part, the alluvial, flood, and delta plains of two major rivers (Sacramento and San Joaquin Rivers) and their tributaries.

Near surface deposits at the site consist of recent alluvial fan deposits consisting of sediments deposited during flood stages of major streams derived from fluvial systems originating from higher elevations to the east [Rogers, 1966].

5.3 HYDROLOGY

The site is located between several major surface water sources. The San Joaquin River is located about 10.5 miles west of the study area. The Merced River is located about 8 miles south of the study area. The Tuolumne River is located about 8 miles north of the study area.

The study area is located within the Turlock groundwater sub-basin of the San Joaquin River groundwater basin [DWR, 1980]. The water table in the study area occurs typically at about 7 to 19 feet bgs [NCE, 2006]. Based on historical contour maps published by the California Department of Water Resources (DWR), the unconfined-aquifer groundwater flow direction was toward the south or southwest between 1958 and 2006. The E-Clay (Corcoran Clay) is an important hydrologic confining unit in the axial and western San Joaquin Valley. Depth to the E-Clay is approximately 100 ft. bgs in area of the site [Page, 1986].

6.0 SAMPLING, TESTING AND ANALYSIS PLAN

The following subsections describe the sampling, testing and analysis plan (SAP) for the investigation, including the strategy and approach for sampling and testing (Section 6.1) and details on specific sampling and analysis methods (Section 6.2). All field work for the investigation will be performed in accordance with the Health and Safety Plan (HASP), which is presented in Appendix A.

6.1 STRATEGY AND APPROACH

Field activities will be conducted in four distinct phases. The first phase will consist of baseline groundwater monitoring of existing wells within the study area. The second phase will be CPT drilling and depth-discrete groundwater sampling. The CPT drilling will be conducted in order to investigate data gaps near Old Carr's cleaners, as well as to perform a stratigraphic evaluation of the entire study area, and collect groundwater and soil samples in order to support design of a pump and treat remediation system. The third stage of field activities will consist of the installation of one extraction well and one observation well near existing wells MW14/15 and MW-11. The final stage of the field activities will consist of an aquifer performance test using the newly installed extraction well.

CPT drilling and depth-discrete groundwater sampling will be performed at up to seven total locations (six for Old Carr's and one for the proposed extraction well location). At each location, CPT drilling will be used to evaluate lithologic conditions to a depth of about 80 feet bgs, or to the top of the E-Clay, whichever is shallower. Up to 5 depth-discrete groundwater samples will be collected using Hydropunch-type sampling equipment in each CPT boring. The sampling depths will be selected to provide data from those preferential groundwater pathways (i.e., granular sediments) identified by the CPT drilling. The samples will be submitted to a California-accredited environmental laboratory for analysis of dissolved VOCs.

In all four phases, the sampling locations will be recorded using Global Positioning System (GPS) equipment, as well as by pacing or rough measurements from nearby landmarks, such as building corners, and documented in the written field records.

6.2 SAMPLING, TESTING AND ANALYSIS METHODS

This subsection describes the sampling and analysis methods that will be used during this investigation. Sample collection procedures are discussed in Section 6.2.1. Sample handling and documentation procedures are discussed in Section 6.2.2. Sample analytical procedures are discussed in Section 6.2.3. Decontamination procedures are discussed in Section 6.2.4. Investigative waste management procedures are discussed in Section 6.2.5.

6.2.1 Sample Collection

The subsections below describe the sample collection methods and procedures.

6.2.1.1 Legal Access, Permits, and Utility Clearance

Prior to any field sampling, legal access, necessary permits, and utility clearance will be obtained. The City of Turlock will obtain legal access from private property owners. A permit will be obtained from the City of Turlock for sampling within the public right of way. Underground Services Alert will be contacted to mark underground utilities at least 2 working days prior to the initiation of intrusive field tasks. If necessary, a private utility locator will check for underground utilities in selected planned sampling locations.

6.2.1.2 Baseline Groundwater Monitoring and Sampling

URS will conduct a baseline groundwater monitoring event by collecting samples from all monitoring wells listed in Table 1. Samples will be collected with standard purge and bail

methods. All groundwater monitoring activities will be conducted in accordance with URS' sampling and monitoring protocols included in Appendix B and C with the following exception: field measurements of dissolved oxygen and oxidation reduction potential (ORP) will be added to the baseline monitoring program.

6.2.1.3 CPT Probing and Groundwater Sampling

A California C57-licensed drilling company, experienced in the use of CPT equipment, will advance up to six (6) CPT probes near Old Carr's Cleaners, and one (1) CPT probe near monitoring wells MW-14, MW-15 and MW-11, the proposed extraction well location, using a 30-ton direct-push rig. The actual CPT drilling locations are highly dependent on the results of the baseline monitoring program and property access issues, and therefore we have provided proposed drilling zones on Figure 2. More specific drilling locations will be proposed in a simple letter amendment following the receipt of the baseline analytical data.

The CPT equipment and methodology will meet or exceed ASTM D5778-95 specifications. Continuous logs of cone tip resistance and sleeve friction resistance will be made as the probe is pushed downward, under the reaction of the heavy truck chassis. The measurements, at any given depth, are generally correlative to whether the soils are predominantly coarse-grained or fine-grained, and to the relative density (for coarse-grained soils) or stiffness (for fine-grained soils). The soils encountered by the probe will be classified relative to the Unified Soil Classification System (USCS) using the ratio of tip resistance to sleeve friction in accordance with the Modified Campanella and Robertson Soil Behavior Chart. The soil classifications will be compared and correlated to previous lithologic logs prepared for nearby test holes advanced for other site investigations within the study area.

At each sampling location, a test hole will be advanced approximately 80-feet with a CPT probe to evaluate lithology. A second, parallel boring will be advanced adjacent to the CPT boring to collect depth-discrete groundwater samples. Both test holes will be approximately 2 inches diameter. The groundwater samples will be collected using Hydropunch-type sampling equipment advanced under hydraulic pressure. A bailer will be used to collect the groundwater samples at the bottom of the hollow string of rods. The groundwater collected in the bailer will be poured into 40-milliliter volatile organic analysis (VOA) vials that contain a small amount of hydrochloric acid preservative. Immediately after sample collection, sample containers will be labeled and placed in a chilled, insulated container. The samples will be shipped to an environmental laboratory for analysis, as discussed in Section 6.2.3. In the CPT probe advanced at the extraction well location, a minimum of three soil samples will be collected in order to provide an analysis of grain size, bulk density, fraction organic carbon, and porosity. These analyses will be used for design of the extraction well. Following completion, all test holes will be fully sealed by pressure-grouting with neat cement.

6.2.1.4 Extraction Well Installation

One extraction well will be installed at a location to be determined, although it will likely be placed near/downgradient of existing monitoring wells MW-14/15 and MW-11. The screened interval, targeted aquifer zone and anticipated pumping rate will be selected based on the CPT data following the second phase of the field investigations. A typical extraction well construction diagram is provided on Figure 4.

The extraction well will be installed by a California C-57 licensed driller with a truck mounted drill rig utilizing hollow stem auger drilling techniques, unless adverse drilling conditions such as flowing sands are anticipated. In such a case, other drilling techniques (such as mud rotary drilling) will be used. During drilling, soil grab samples will be collected at approximately 5 foot intervals and the soil profile will be logged in accordance with the Unified Soils Classification System by URS personnel under the direction of a California Registered Civil Engineer or Geologist.

Casing, screen, filter packs, well seals, etc. will be installed in accordance with all applicable regulatory standards. The location and slot size for the well will be determined based on the CPT and baseline sampling evaluations. The extraction well will be screened in the expected most productive coarse-grained horizons with the highest PCE concentrations. The well will be completed below grade in a traffic rated, flush-mounted utility box. The well will be developed by surging and pumping until the water becomes relatively free of turbidity. During pumping, URS will periodically record monitoring parameters including pH, temperature, and conductivity until parameters stabilize to within 10 percent of previous measurements. Development water will be treated with activated carbon to non-detect for all volatile organic compounds (with a detection limit of 0.5µg/L) prior to final discharge into the City's wastewater collection system.

6.2.1.4 Observation Well Installation

One shallow observation well will be installed to allow water level data to be collected during the aquifer performance test on the extraction well. The location of the observation well will be dependent on the results of the CPT investigation and the location of the extraction well. However, it is anticipated that the observation well will be located within 30-feet of the extraction well to provide a reasonable measure of the extraction well's radius of capture.

The observation well will be installed by a California C-57 licensed driller with a truck mounted drill rig utilizing hollow stem auger drilling techniques, unless adverse drilling conditions such as flowing sands are anticipated. In such a case, other drilling techniques (such as mud rotary drilling) will be used. A typical observation well diagram is provided Figure 5.

Casing, screen, filter packs, well seals, etc. will be installed in accordance with all applicable regulatory standards. The well will be completed below grade in a traffic rated, flush-mounted well vault and secured with a locking well cap. The well will be developed by surging and pumping until the water becomes relatively free of turbidity. During pumping, URS will periodically record monitoring parameters including pH, temperature, and conductivity until parameters stabilize to within 10 percent of previous measurements. Development water will be treated with activated carbon to non-detect for all volatile organic compounds (with a detection limit of 0.5µg/L) prior to final discharge into the City's wastewater collection system.

6.2.1.5 Aquifer Performance Test

Following completion of the extraction and observation wells, an aquifer performance test using the newly installed extraction well will be performed. The test will include a background monitoring period, a step-drawdown test, a constant rate discharge test, and a recovery test. Based on the step-test results, a discharge rate will be selected for the constant-rate test to stress

the subject aquifer without lowering water levels in the pumping well to the pump intake. Major steps in the aquifer performance test include:

- Performance of a constant rate discharge and recovery tests for 48 to 72 hours to provide estimates of aquifer properties, including transmissivity, hydraulic conductivity, and storage coefficient;
- Installation of self-contained pressure transducers in the extraction well and in the nearby observation points (MW-11, MW-14, MW-15 and the newly installed observation well) to monitor water level fluctuations prior to, during, and after the pumping and recovery tests;
- Collection of water samples from the discharge of the extraction well after 24-hours and at the conclusion of the test. The water samples will be submitted to a California-certified analytical laboratory and analyzed for suite of organic and inorganic analytes: VOCs, semi-volatile organic compounds (SVOCs), dissolved organic carbon, petroleum hydrocarbons, iron, manganese, chromium, alkalinity, total dissolved solids, and total suspended solids.
- Collection of water samples periodically throughout the pumping test for field analysis. The following field parameters will measured: temperature, conductivity, pH, ORP, and dissolved oxygen.
- Treating of pumped water to ND for all VOCs (with a detection limit of 0.5 µg/L) with activated carbon, and then discharge via temporary piping to the City's wastewater collection system. One sample of the treated water will be collected and analyzed for VOCs to confirm the efficacy of the treatment process.
- Monitoring of water levels at the pumping and observation wells using electronic data loggers and pressure transducers. Readings will be verified periodically by URS staff using an electric water-level sounder. We will also monitor flow rates during the tests using an in-line mechanical flow meter adequate to measure the rate of flow to ±0.1 gpm.

Upon completion of the pumping tests, key aquifer hydraulic parameters (i.e., hydraulic conductivity, transmissivity and storativity, etc.) will be calculated in accordance with US Geological Survey Water Supply Paper 2220, Basic Ground-Water Hydrology [Health, Ralph C., 1983]. Subsequently, a written report will be prepared discussing the feasibility and appropriateness of pump and treat as a viable remediation system based upon the results of the aquifer performance test.

6.2.1.6 Field Quality Control Sampling

Field quality control (QC) samples will consist of travel blanks, field duplicates, and equipment rinseate blanks for the groundwater samples. QC samples will be submitted to the laboratory "blind" by assignment of sample names that do not indicate to the laboratory that they are QC samples.

During groundwater sampling, one travel blank per day, consisting of deionized/distilled water in a VOA vial will be carried into the field and submitted to the laboratory along with the samples collected that day. During groundwater sampling, field duplicates will be collected at a minimum rate of one per 20 monitoring well samples or fraction thereof. Equipment rinseate

blanks will consist of deionized/distilled water that has been passed through the decontaminated sampling equipment. Equipment rinseate blanks will be collected prior to beginning each sampling round and then again at the completion of each sampling round.

6.2.1.7 Field Equipment and Calibration

The field equipment to be provided by URS and specific calibration procedures are discussed in Appendix B.

6.2.2 Sample Handling and Documentation

The following sections describe the sample handling and documentation procedures that will be followed during the drilling program. Procedures related to monitoring well sampling are discussed in Appendix B.

6.2.2.1 Sample Packaging and Shipment

To identify and manage samples obtained in the field, a sample label will be affixed to each sample container. The sample labels will include the following information:

- Job number
- Sample name (e.g., B-1 @ 5')
- Sampler's initials
- Date and time of collection
- Preservative, if any

Following collection and labeling, samples will be immediately placed in a chilled, insulated container for delivery to the analytical laboratory. The following protocol will be followed for sample packaging:

- Sample containers will be placed in clear, plastic, leak-resistant bags prior to placement in the insulated container. Sample sleeve liner caps or container screw caps will be checked for tightness and sealed prior to placing the sample in the bag.
- Samples to be shipped will be packed in the insulated container with packaging materials to minimize the potential for disturbance and/or breakage of the sample containers.
- Ice or "Blue Ice" packs will be placed in leak-resistant plastic bags and included in the insulated container to keep samples at a chilled temperature of 4^{o} C plus or minus 2^{o} C during transport to the analytical laboratory. When ice is used, the drain plug of the insulated container will be secured with tape to prevent melting ice from leaking out of the cooler.
- The chain-of-custody form will be placed in a water-resistant plastic bag and taped on the inside of the lid of the cooler.
- Strapping tape will be placed around each cooler to secure the lid prior to transport to the laboratory.

Every effort will be made to transport the samples to the analytical laboratory at the end of each sampling day, or to ship the samples each day by overnight courier. However, for sampling days that continue after operating hours of the laboratory or the shipping deadline, the samples will be stored overnight in a secured location (e.g., in a locked room) under appropriate chain-of-custody procedures, and the samples will be shipped to the laboratory the next day. Prior to overnight storage, the cooler(s) will be restocked with new ice or blue ice to maintain the samples in a chilled state of 4^{o} C plus or minus 2^{o} C.

6.2.2.2 Sample Containers and Preservatives

The laboratories will provide sample containers for the water samples. The containers will be pre-cleaned to meet USEPA standards and will not be rinsed in the field prior to sample collection. Prior to shipment to URS, the laboratories will place any required preservatives into the containers.

6.2.2.3 Field Records

Daily field records will document where, when, how, and from whom any vital project information was obtained. Field record entries will be complete and accurate enough to permit reconstruction of field activities. Each page will be dated and the time of entry noted. All entries will be legible, written in ink, and signed by the individual making the entries. Language will be factual, objective, and free of personal opinions or other terminology, which might prove inappropriate. If an error is made, corrections will be done by crossing a single line through the error and entering the correct information. Corrections will be dated and initialed. No entries will be obliterated or rendered unreadable.

Typical field forms are provided in Appendix D for reference.

6.2.2.4 Chain-of-Custody Records

Chain-of-custody (COC) records will be used to document sample custody during collection and shipment to the laboratory for analysis. A COC record will accompany each sample shipment in order to identify the contents of each shipment and maintain the custodial integrity of the samples. A sample is considered to be in someone's custody if it is either in someone's physical possession, in someone's view, locked up, or kept in a secured area that is restricted to authorized personnel. Until receipt by the laboratory, the custody of the samples will be the responsibility of the sample collector or courier.

6.2.2.5 Photographs

Photographs will be taken to document unusual conditions encountered on-site. The photographs will serve to verify information entered on the field records. When a photograph is taken, the following information will be written on the field record or will be recorded in a separate field photography log:

- Time, date, location, and, if appropriate, weather conditions.
- Description of the subject photographed, including sample identification number.
- Point-of-view orientation of the photo (e.g., to the west; to the east-southeast).
- Name of person taking the photograph.

6.2.3 Sample Analysis

Water samples, with the exception of samples collected from the extraction well during the pumping test (see Section 6.2.1.5), will be analyzed for VOCs using USEPA method 8260B by a laboratory that is accredited under the California Department of Health Services, Environmental Laboratory Accreditation Program (ELAP). The analytical detection limit for PCE will be not greater than 0.5 μg/L. The laboratory will be instructed to report estimated values, i.e., between the method detection limit and reporting limit, with a "J" qualifier. For the pumping test, the following additional analyses will be performed: EPA 8270C (SVOCs), SM 5310C (dissolved organic carbon), EPA 8015M/8020 (petroleum hydrocarbons), EPA 200.8 (metals), EPA 310.1/SM 2320B (Alkalinity), and EPA 160 (solids).

Soil samples will be analyzed for particle size distribution, bulk density, fraction organic carbon, and porosity by a geotechnical engineering laboratory to provide data for design of the extraction wells. Particle size distribution analyses will be performed in accordance with ASTM test method D422.

6.2.4 Decontamination Procedures

All equipment that comes into contact with potentially contaminated media will be decontaminated consistently to assure the quality of samples collected. Disposable equipment intended for one time use will not be decontaminated, but will be packaged for appropriate disposal. Prior to and after each use at each sampling location and interval, all non-disposable equipment that comes in contact with sampled media will be decontaminated using the following procedures:

- Non-phosphate detergent and tap water wash, using a brush if necessary
- Tap-water rinse
- Deionized/distilled water rinse

Equipment will be decontaminated in a pre-designated area on pallets or plastic sheeting, and clean bulky equipment will be stored on plastic sheeting in uncontaminated areas. When not in use, decontaminated sampling equipment will be covered with clean plastic.

6.2.5 Investigative Waste Management

Anticipated investigation-derived wastes (IDWs) requiring management during this investigation comprise the following:

- Used personal protective equipment (PPE)
- Disposable sampling equipment
- Decontamination fluids
- Soil cuttings
- Purge water and aquifer test water

The USEPA's National Contingency Plan (NCP) requires that management of IDW generated during such investigations comply with all applicable or relevant and appropriate requirements (ARARs) to the extent practicable. Listed below are the procedures that will be followed for handling the IDW. These procedures have enough flexibility to allow the Site investigation team to use its professional judgment for the proper disposal method for each type of IDW generated at each sampling location. Any waste storage containers such as 55-gallon steel drums will be sealed and labeled (including date) and placed in a secure area of the Site.

The handling protocols described below are to be utilized for IDW-disposal during the investigation:

- Unless there is contact with apparently grossly contaminated material, used PPE and disposable sampling equipment will be brushed off to remove residual sampling media and then double bagged and placed in a municipal refuse dumpster. These wastes are not considered hazardous due to the limited amount of sampling media that may adhere to this solid material. Any PPE and disposable equipment to be disposed of that can still be reused will be rendered inoperable before disposal in the refuse dumpster. If field personnel are uncertain as to the level of contamination remaining on the PPE or solid material, this material will be contained in sealed 55-gallon drums for eventual disposal based on the results of sample analysis. The associated sample location and date that is the source of this apparently contaminated material will be indicated on the 55-gallon drum to aid in this determination.
- All purge water and aquifer test water will be treated until final discharge complies with the water quality standards of Turlock Municipal Code Chapter 6-4 and then discharged to the City's POTW (assume ND for all VOCs with a detection limit of 0.5 µg/L). Water will be pumped through a pressure vessel containing 1,000-lbs of activated carbon to meet these discharge limits.
- Should solids generated be less than 5 yards, the solids may be contained in steel, 55 gallon drums. If significantly more drill cuttings are generated, than solids generated during drilling will be disposed of in a 20-yard roll-off bin. Solids will then be transported to a licensed Class 1 or Class 2 landfill as appropriate based on the profiling.

In the event that storage of IDWs in containers becomes necessary, the containers will be stored in a secure location pending analytical results. After review of the analytical results, and any additional analyses required for waste handling and disposal such as STLC and TCLP analyses, the containers will be transported to an appropriate disposal facility in accordance with all ARARs.

7.0 QUALITY ASSURANCE AND QUALITY CONTROL PLAN

This section describes the quality assurance and quality control (QA/QC) plan, which will provide an appropriate level of assurance regarding the reliability and usability of the data generated during the investigation. An integral part of the QA/QC plan is proper field sampling and documentation procedures, which have already been described in Section 6.0, and thus will

not be repeated herein. This section sets forth the policies, procedures, and activities for the identification and documentation of the quality of the data generated during the investigation.

7.1 DATA QUALITY OBJECTIVE PROCESS

The project data quality objectives (DQOs) developed specifically for the planned sampling and analysis program have been determined based on USEPA's seven-step DQO process [USEPA, 2000]. The project definition associated with each step of the DQO process can be summarized as follows:

State the problem: The purpose of the testing and sampling program is two fold: (1) to provide information necessary to design and operate a pump and treat remediation system to remove PCE impacted groundwater from the study area; and (2) to better estimate the lateral and vertical extent of the PCE plume from Old Carr's Cleaners.

Identify the Decision: The data obtained from the sampling, testing and analysis activities will be used to evaluate the feasibility of pump and treat remediation, select an appropriate groundwater extraction location, and design the system. The CPT and well baseline sampling data will also be used to determine if the Old Carr's Cleaners PCE plume has been sufficiently characterized.

Identify Inputs to the Decision: Inputs to the decision will include results of analytical and/or physical testing of groundwater and soil samples, stratigraphic data provided by CPT interpretations, and results of the aquifer performance tests.

Define the Study Boundaries: The boundaries of the field sampling, testing and analysis program will be the perimeter of the study area.

Develop a Decision Rule: (1) If lithologic, pumping test, and analytical data indicate that pump and treat will address further downward migration of the Downtown PCE plume, and will provide an appropriate extraction location or locations, then this conclusion will be presented in the Investigation Report. (2) If data collected from the proposed CPT drilling adequately characterizes the lateral and vertical extent of the Old Carr's Cleaners PCE plume, then this conclusion and a graphical representation of the plume will be presented in the Investigation Report. If the data collected do not answer (1) and/or (2), then additional work will be recommended. Specifically, a minimal flow rate (< 10 gpm) or a limited capture radius (< 25-feet) would necessitate a re-evaluation of the remediation program.

Specify Limits on Decision Error: The results of the analytical testing will be subject to data evaluation following the procedures for data review specified in Section 7.3. Data will be determined to be valid if the specified limits on precision, accuracy, representativeness, comparability, completeness, and sensitivity are achieved.

Optimize the Design: The field-sampling program has been designed to provide the type and quantity of data needed to satisfy the aforementioned objectives. This Work Plan provides the specifications for the data collection activities, including the numbers of samples, respective locations and sampling techniques. The quality of the data will be assessed through the procedures further described herein.

7.2 SPECIFIC DATA QUALITY OBJECTIVES

Specific DQOs for the data quality indicators (DQIs) of precision, accuracy, representativeness, completeness, comparability, and method detection limits have been selected. These DQIs and their corresponding DQOs are discussed in turn below.

Precision

Precision measures the reproducibility of repetitive measurements. It is strictly defined as the degree of mutual agreement among independent measurements as the result of repeated application of the sample process under similar conditions.

Analytical precision is a measurement of the variability associated with duplicate or replicate analyses of the same sample in the laboratory, and is determined by analysis of laboratory quality control samples, such as duplicate control samples (LCSD or DCS), matrix spike duplicates (MSD), or sample duplicates. If the recoveries of analytes in the specified control samples are comparable within established control limits, then precision is within limits.

Total precision is a measurement of the variability associated with the entire sampling and analytical process. It is determined by analysis of duplicate or replicate field samples, and measures variability introduced by both the laboratory and field operations. Field duplicate samples are analyzed to assess field and analytical precision.

Duplicate results are assessed using the relative percent difference (RPD) between duplicate measurements. If the RPD for laboratory quality control samples exceeds 30 percent, data will be qualified. If the RPD between primary and duplicate field samples exceeds 50 percent, data will be qualified. The RPD will be calculated as follows:

$$\%RPD = 200 \times \frac{X_2 - X_1}{X_2 + X_1}$$

where X_1 is the larger of the two observed values and X_2 is the smaller of the two observed values.

Accuracy

Accuracy is a statistical measurement of correctness and includes components of random error (variability due to imprecision) and systematic error. It reflects the total error associated with a measurement. A measurement is accurate when the value reported does not differ from the true value or known concentration of the spike or standard.

Accuracy of laboratory analyses will be assessed by laboratory control samples, surrogate standards, matrix spikes, and initial and continuing calibrations of instruments. Laboratory accuracy is expressed as the percent recovery (%R). Accuracy limits are statistically generated by the laboratory, required by specified EPA methods, or set forth in guidance documents prepared by various organizations. If the percent recovery is determined to be outside of acceptance criteria, associated data will be qualified. The calculation of percent recovery is provided below:

$$\% R = 100 \times \frac{X_S - X}{T}$$

where X_S is the measured value of the spiked sample, X is the measured value of the unspiked sample, and T is the true value of the spike solution added.

Field accuracy will be assessed through the analysis of field equipment blanks. Analysis of blanks will monitor errors associated with the sampling process including equipment decontamination procedures, field contamination, sample preservation, and sample handling. The DQO for field equipment blanks is that all values are less than the reporting limit for each target constituent. If contamination is reported in the field equipment blanks, data will be qualified.

Representativeness

Representativeness is the degree to which data accurately and precisely represent a characteristic an environmental condition or a population. It relates both to the area of interest and to the method of taking the individual sample. Representativeness of data collection is addressed by careful preparation of sampling and analysis programs, including use of procedures to avoid false negatives and false positives. This Work Plan, addresses representativeness by specifying sufficient and proper numbers and locations of samples; incorporating appropriate sampling methodologies; specifying and performing proper sample collection and preservation techniques; performing required decontamination procedures; selecting appropriate laboratory methods to prepare and analyze soil, soil gas and groundwater samples; and establishing proper field and laboratory QA/QC procedures for the parameters of interest.

Completeness

Completeness is the amount of valid data obtained compared to the amount that was expected under ideal conditions. The number of valid results divided by the number of possible results, expressed as a percentage, determines the completeness of the data set. The DQO for completeness is to obtain valid results for at least 90 percent of the planned analytical results. The formula for calculation of completeness is presented, as follows:

$$\% \text{ Completeness} = 100 \times \frac{\textit{number of valid results}}{\textit{number of expected results}}$$

Comparability

Comparability is an expression of confidence with which one data set can be compared to another. This QA/QC plan addresses comparability by specifying laboratory methods that are consistent with the current standards of practice as approved by the USEPA and the DTSC, which will allow the data to be evaluated for trends or changes (in space or time). In addition,

comparability is also addressed by specifying that associated standard units of measurement will be used for data reports.

Method Detection Limits

Method detection limits (MDLs) need to be below the action levels, otherwise, there is no way to know whether non-detect results are above or below the action level. For this investigation, the VOC action levels are based on California health-based criteria.

7.3 DATA REVIEW

A qualified professional will review the laboratory reports and prepare a data-review memorandum that will be appended to the Investigation Report. The laboratory reports will be reviewed for the following:

- Data Completeness
- Chain of Custody
- Holding Times
- Sample Preservation
- Blanks
- Laboratory Control Samples
- Matrix Spike/Matrix Spike Duplicates
- Surrogates/Internal Standards (as applicable);
- Field Quality Control Samples

Data that do not meet the DQOs set forth in Section 7.2 will be qualified. Data qualification flags will indicate whether results are considered anomalous, estimated, or rejected. Only rejected data are considered unusable for decision-making purposes; however, other qualified data may require further verification, such as reviewing the laboratory's raw data.

For analytical results, various qualifiers pertaining to the quality of the data may be assigned to certain analytical results by either the laboratory conducting the analysis or by persons conducting data review as discussed above. For example, some results may be marked as estimated if the concentration is below the verifiable or contract-required detection limit but may be detected at a lower value by the instrument. All qualified results or data discrepancies will be reviewed and explained in the Investigation Report. If enough data are rejected as unusable for decision-making purposes, such that the DQO for completeness is not achieved, then corrective actions such as reanalysis or resampling will be performed, with RWQCB concurrence.

7.4 DATA MANAGEMENT

The URS Project Manager will review the field notebooks, field forms (such as boring logs), and chain-of-custody forms to evaluate completeness of the field records, appropriateness of the field methods employed, and whether the chain-of-custody forms were completed correctly. When the laboratory reports are submitted to URS, the URS data reviewer will prepare a data review

memorandum as set forth in Section 7.3. Subsequently, the data will be entered onto tables to be included in the Report, including any necessary qualification flags identified in the data review memorandum. An independent person (i.e., not the person who prepared the data tables) will check every entry on the data tables for completeness and correctness. Similarly, figures (including boring logs) to be published in the Report will be checked by an independent person to verify that all data on the figures (including soil classifications, PID readings, etc. on the boring logs) is correct. All project documentation, including field records, laboratory reports, data review memoranda, and data tables, will be retained in URS's project files and made available to other parties as needed and appropriate.

7.5 ASSESSMENT OVERSIGHT

Responsibility for implementation of this Work Plan, including the QA/QC plan, will rest with the URS Project Manager. The Project Manager will perform at least one audit of field procedures, and will review the field notebooks, other field forms, COCs, and laboratory reports for compliance with the QA/QC plan.

8.0 FIELD VARIANCES

If field conditions are not as anticipated, it may become necessary to implement modifications to the field sampling plan presented in this Work Plan. Field personnel will notify the URS Project Manager when deviations from this Work Plan appear necessary. The RWQCB will be notified of the proposed modifications, and a verbal or written approval will be obtained from the RWQCB before implementing the modifications. Modifications to the approved Work Plan will be documented in the field records and in the investigation report.

9.0 REPORTING

After the Baseline Groundwater Monitoring event, a groundwater monitoring report will be issued with the monitoring results. After the completion of the CPT drilling program, a letter report will be prepared summarizing the results of the Stratigraphic Evaluation and Water Quality Analyses.

At the end of the extraction well and observation well installations and the aquifer performance test, a written summary report will be prepared. This report will describe the extraction and observation well installations, present the results of the aquifer performance test and extraction well water analytical results, and discuss the feasibility and appropriateness of pump and treat as a viable remediation system.

10.0 LIMITATIONS

This Work Plan for the City of Turlock PCE Pump and Treat Project, Turlock, California was prepared by URS Corporation (URS) for the sole use of Client. This Work Plan was prepared in a manner consistent with the level of care and skill ordinarily exercised by professional engineers, geologists, and environmental scientists engaged in similar projects in the geographic area of the Site. URS provides no other warranties, either express or implied, concerning the

contents of this Work Plan, which was prepared under the technical direction of the registered professional who signed the cover letter.

12.0 REFERENCES

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APPENDIX A

HEALTH AND SAFETY PLAN

APPENDIX D

FIELD FORMS

ATTACHMENT 9: Supporting Documentation - 6

The City of Turlock PCE Project was funded with a fixed schedule (ending January 31, 2012) and budget ($650,000). As documented below in the City's Invoice Tally, the project was completed on time and within budget.

URS PCE PROJECT

City Invoice	URS Invoice	Amount	Date	Mailed to Reg Bd
2009-001	N/A	$ 141,041.25	2/20/2010	2/20/2010
2009-002	4164630	$ 47,081.63	12/15/2009	2/2/2010
2010-001	4188847	$ 40,059.58	1/14/2010	1/15/2010
2010-002	4205858	$ 5,815.00	2/10/2010	2/17/2010
2010-003	4238306	$ 5,120.63	3/4/2010	3/23/2010
2010-004	4267553	$ 3,584.58	4/2/2010	4/30/2010
2010-005	4299264	$ 24,294.71	5/6/2010	5/19/2010
2010-006	4358947	$ 76,317.75	7/21/2010	7/26/2010
2010-007	4391808	$ 38,631.08	8/11/2010	8/18/2010
2010-008	4420246	$ 16,797.85	9/13/2010	9/21/2010
2010-009	4449433	$ 11,365.92	10/7/2010	10/15/2010
2010-010	4484923	$ 7,390.69	11/16/2010	11/18/2010
2011-001	4515568	$ 3,074.53	12/16/2010	1/4/2011
2011-002	4549440	$ 680.66		1/19/2011
2011-003	4575870	$ 5,840.90		2/23/2011
2011-004	4608571	$ 3,231.02		3/8/2011
2011-005	4637648	$ 3,997.42		4/7/2011
2011-006	4669696	$ 4,548.75		5/23/2011
2011-007	4697155	$ 5,598.75		6/9/2011
2011-008	4735983	$ 3,257.12		7/21/2011
2011-009	4772962	$ 5,958.65		9/8/2011
2011-010	4802951	$ 3,007.59		9/8/2011
2011-011	4832564	$ 680.00		10/17/2011
2011-012	4866922	$ 3,447.50	11/9/2011	12/8/2011
2011-013	4910076	$ 737.77	12/8/2011	1/4/2012
2012-001		$ 112,737.00		1/13/2012
2012-002		$ 14,374.09		
URS INVOICES		**$ 320,520.08**		

FUNDING AWARD	$	650,000.00
REGIONAL BOARD	$	(50,000.00)
CITY REIMBURSEMENT	$	141,041.25
URS TOTAL	$	320,520.08
REMAINDER FOR CONSTRUCTION	$	138,438.67
ACTUAL CONSTRUCTION	$	127,111.09
REMAINDER	$	11,327.58
GRAND TOTAL CITY	$	600,000.00